

# NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

September 7, 2010

# Precipitation and Snowpack

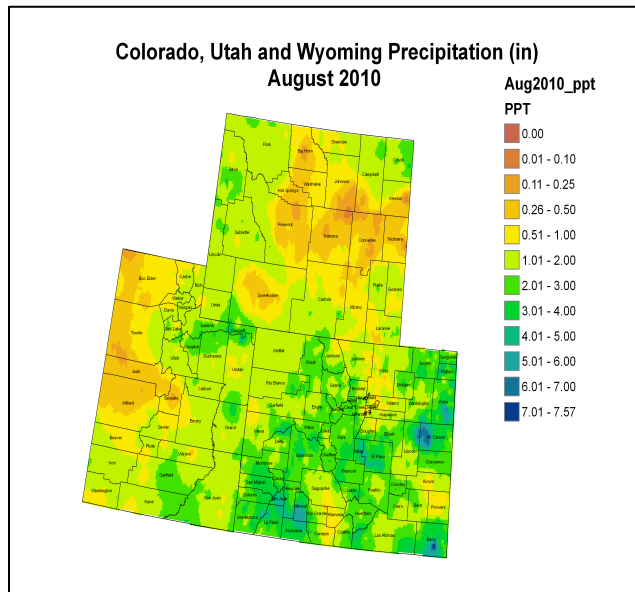


Fig. 1: August precip in inches

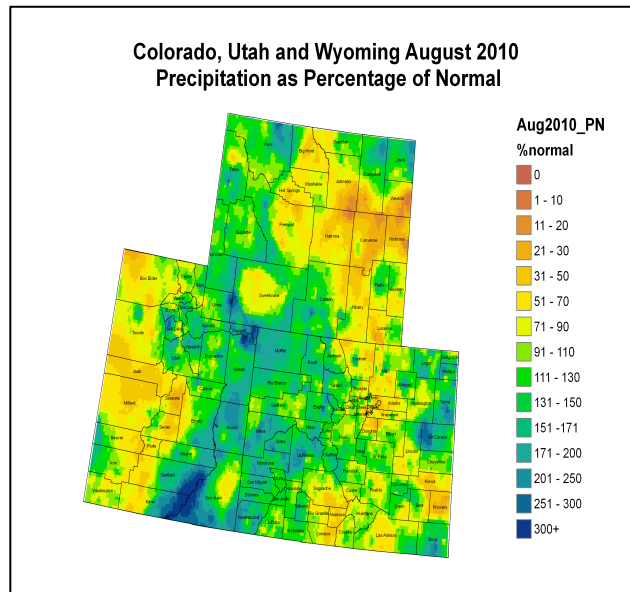


Fig. 2: August precip as percent of average

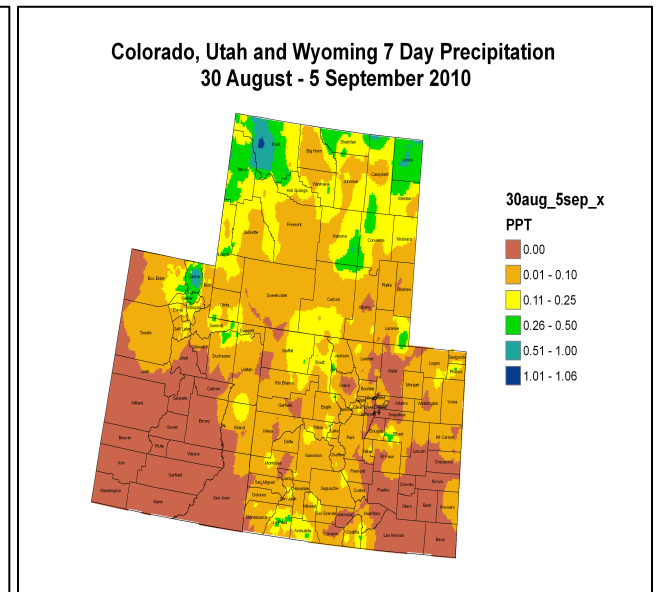


Fig. 3: Aug 30 – Sep 5 precip in inches

For the month of August, the heaviest amounts of precipitation fell in the San Juan basin in Colorado and the Lower Green River basin in Utah (Fig. 1), where some areas saw close to 4 inches. Sweetwater County, WY was the driest county in the Upper Colorado River Basin (UCRB) with less than an inch of precipitation throughout the county. Aside from Sweetwater County and San Juan County, UT, the rest of the basin saw near or above average precipitation for the month (Fig. 2).

The start of September has been abnormally dry for most of the UCRB (Fig. 3), with many areas not receiving any precipitation for the past week. The Lower Green River basin, the San Juan basin, and the Yampa-White basin received the most precipitation last week, totaling around a quarter of an inch in each basin.

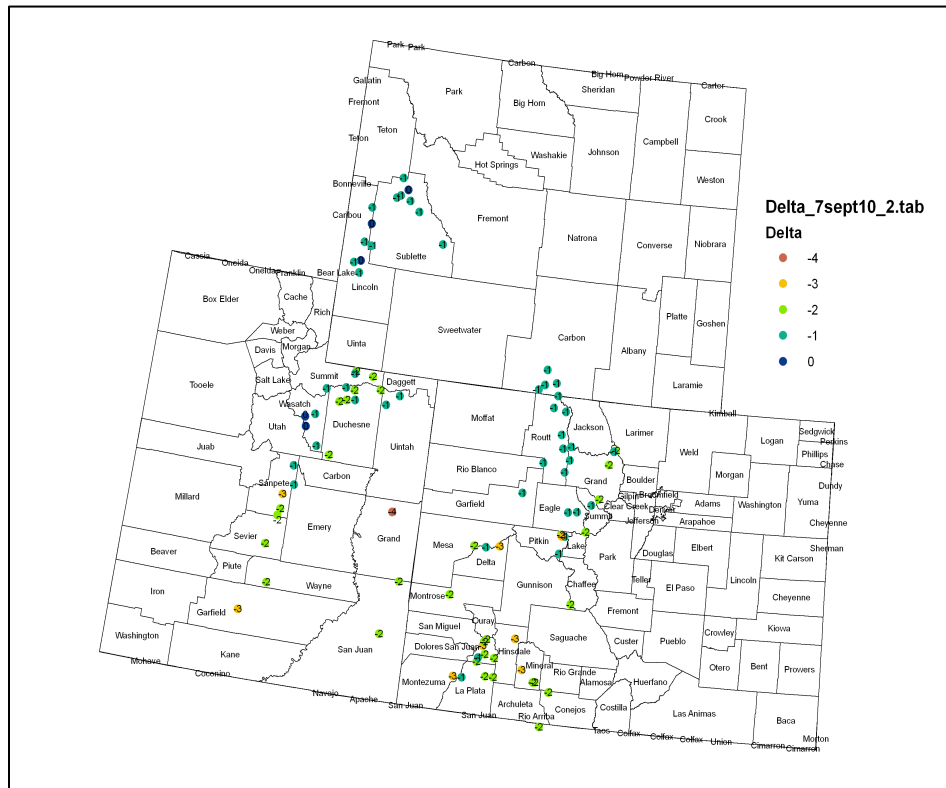


Fig. 4: Snotel WYTD precipitation percent of average change from last week.

Snotel water-year-to-date (WYTD) precipitation percents of average decreased from last week across the entire UCRB (Fig. 4). Along the western border of the UCRB, 2 – 3% decreases from last week were experienced (a fairly large drop in percentage for this late in the water year). The San Juan basin in southwest Colorado also experienced large decreases—around 2 – 3% from last week.

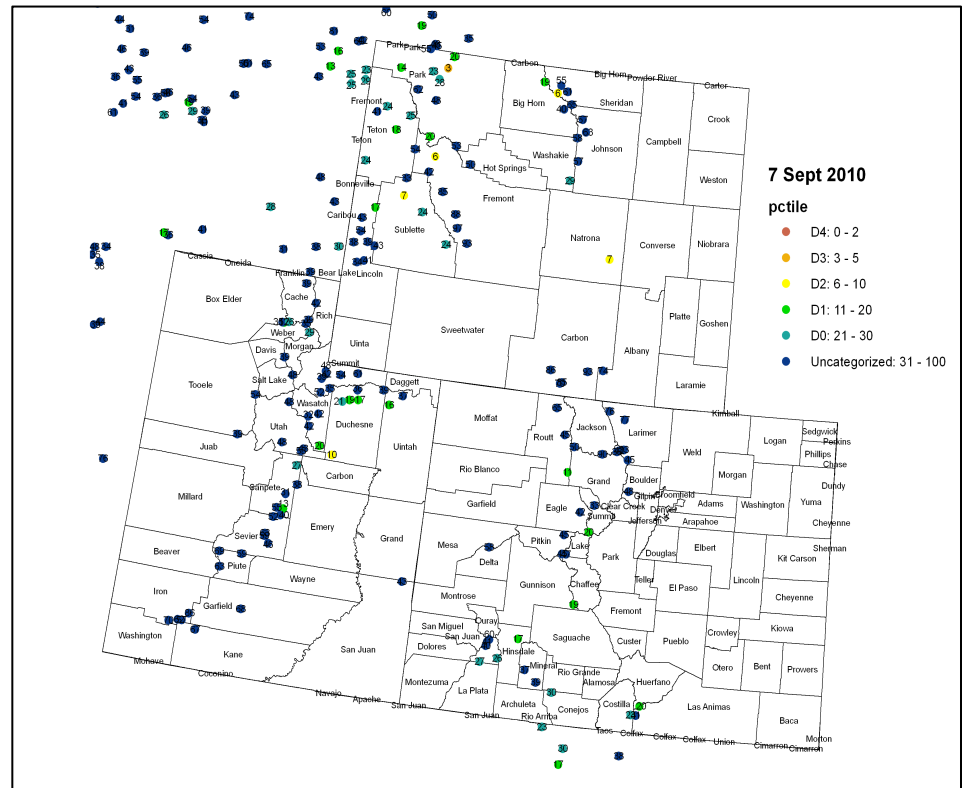


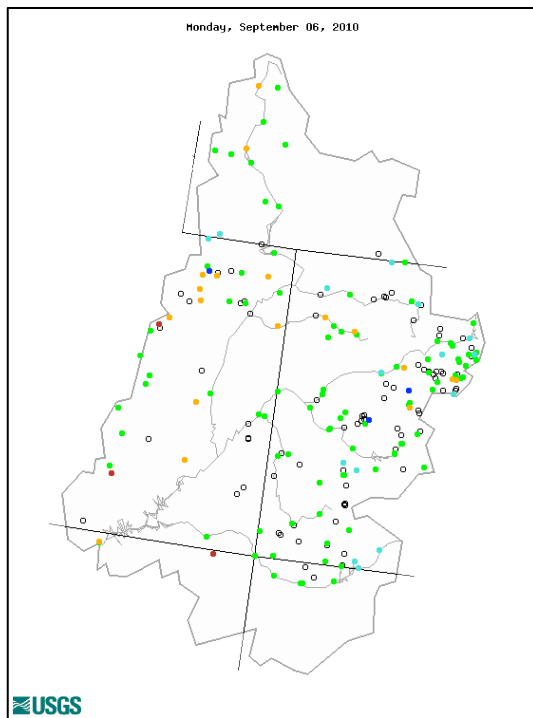
Fig. 5: Snotel WYTD precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

Water-year-to-date (WYTD) percentiles for the Snotel sites in the UCRB show the lowest values corresponding with the locations of current abnormal dryness (D0 or below the 30<sup>th</sup> percentile) on the U.S. Drought Monitor map—in the Rio Grande basin to the south, the Upper and Lower Green River basins and near the Colorado headwaters region (Fig. 5). The remaining Snotel sites show percentiles high enough to not be considered for drought designations.

# Streamflow

About 85% of the USGS streamgages in the UCRB are reporting normal (in the 25 – 75<sup>th</sup> percentile range) or above 7-day average flows as of September 6<sup>th</sup> (Fig. 6)—this is a decrease from the over 90% reported on August 24<sup>th</sup>. The majority of below normal stations are located in the Lower Green River basin in Utah. Several gages along the White River are also recording below normal 7-day average streamflows.

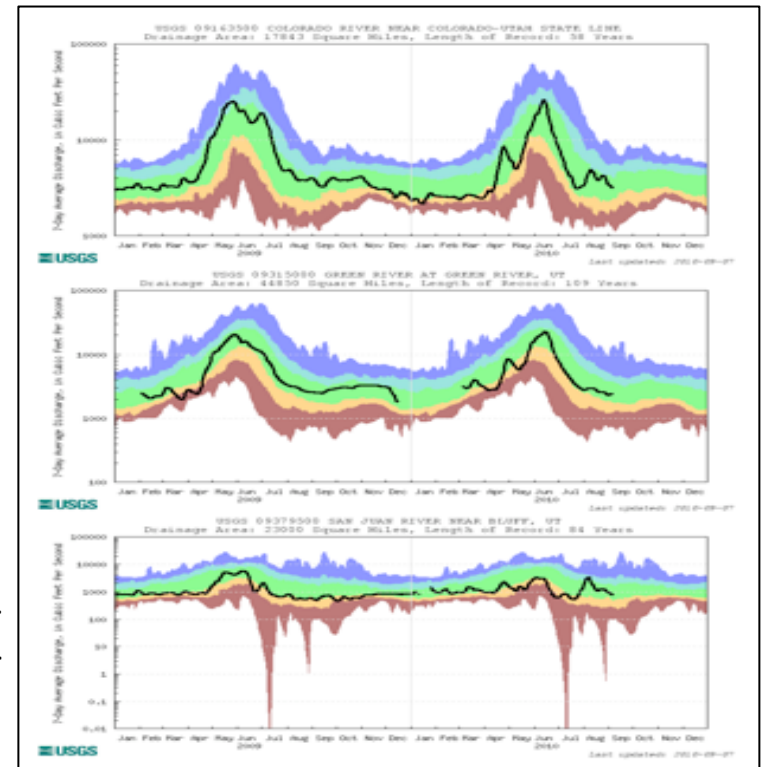
Hydrographs across the basin show 7-day average streamflows continuing their return to base flows (Fig. 7). The streamgages on the Colorado River at the CO-UT state line and on the San Juan River near Bluff, UT show secondary peak flows (as a result of a surge in monsoonal moisture) in late July/early August, followed by a decrease in flows, though both are still within the normal range. The gage on the Green River at Green River, UT also shows near normal streamflow.



Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 6: USGS 7-day average streamflow compared to historical streamflow for September 6<sup>th</sup> in the UCRB.

Fig. 7: USGS 7-day average discharge over time at the CO-UT state line (top), Green River, UT (middle) and Bluff, UT (bottom).



## Water Supply and Demand

Near average temperatures were seen around much of the UCRB last week, with below average temperatures in the Upper Green River basin and above average temperatures along the front range and eastern plains. Soil moisture conditions continue to degrade in northern Colorado. Also fire danger has been prevalent this past week along the eastern border of the UCRB and throughout the front range counties.

All of the major reservoirs in the UCRB continued to see decreases in lake levels over last week. Lake Dillon is still operating near capacity with only slight decreases in storage. All of the major reservoirs, aside from Lake Powell, are above their average September levels. August inflow volume into Lake Powell was 82% of average, which is below what had been projected. Releases have decreased with the beginning of September, and steady releases will continue through October, not fluctuating for power production. Lake Powell levels are 77% of the September average and 63% of capacity.

## Precipitation Forecast

Late summer pattern of weak trough/ridge will continue through the next week. While current forecast keeps T.S. Hermine and associated moisture well to the east of the region, sub-tropical moisture over the four corners will begin to increase in the southwest flow following the passage of a ridge today. This will set the stage for some scattered showers and thunderstorms in western Colorado and eastern Utah on Wednesday. Quantitative precipitation fields show amounts between 0.25 and 0.5 inches centered over the San Juan mountains through Wednesday night, with northeastern Utah and northwestern Colorado possibly seeing some showers linger into Thursday with passage of Pacific trough. This feature will swing across the northern UCRB during the day on Thursday and dry out the atmosphere for the upcoming weekend. With little moisture available, expect dry conditions to prevail through the weekend into early next week.

# Drought and Water Discussion

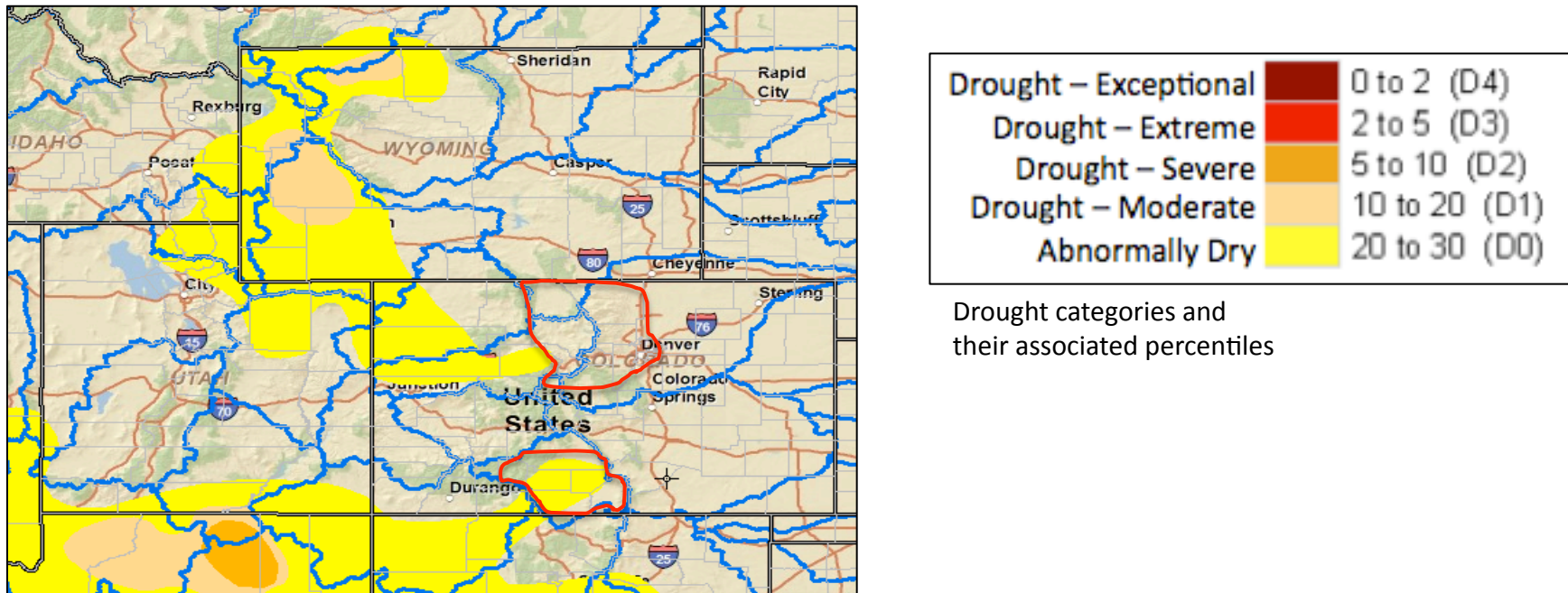


Fig. 8: August 31 release of U.S. Drought Monitor for the UCRB

The Boulder WFO has recommended that D0 be introduced into Grand, Jackson, Summit, Larimer, Boulder, Gilpin, Clear Creek, Jefferson, Park, Denver, Adams and Arapahoe Counties in northern Colorado, based on short term dryness over the past 30 days (Fig. 8). Over the past week, this region has seen little to no precipitation, very low humidities, high winds, and high danger for fire (there is currently a 7,000 acre fire in Boulder County). The DM author's opinion is that this is a very widespread expansion that doesn't have much justification in the soil moisture, SPI, precip, or streamflow products. Fire danger can be used as a drought indicator, but is typically not. Currently, Vegetation Health Index points to short term dryness in the upper soil layers in this region. The author suggests holding off another week, and the area will be closely monitored before this D0 is added. Also recommended is to re-expand the D0 throughout all of the Rio Grande basin in southern Colorado (Fig. 8) based on abnormal dryness over the past 30 days and also in the longer-term.

Status quo is recommended for the remainder of the UCRB.